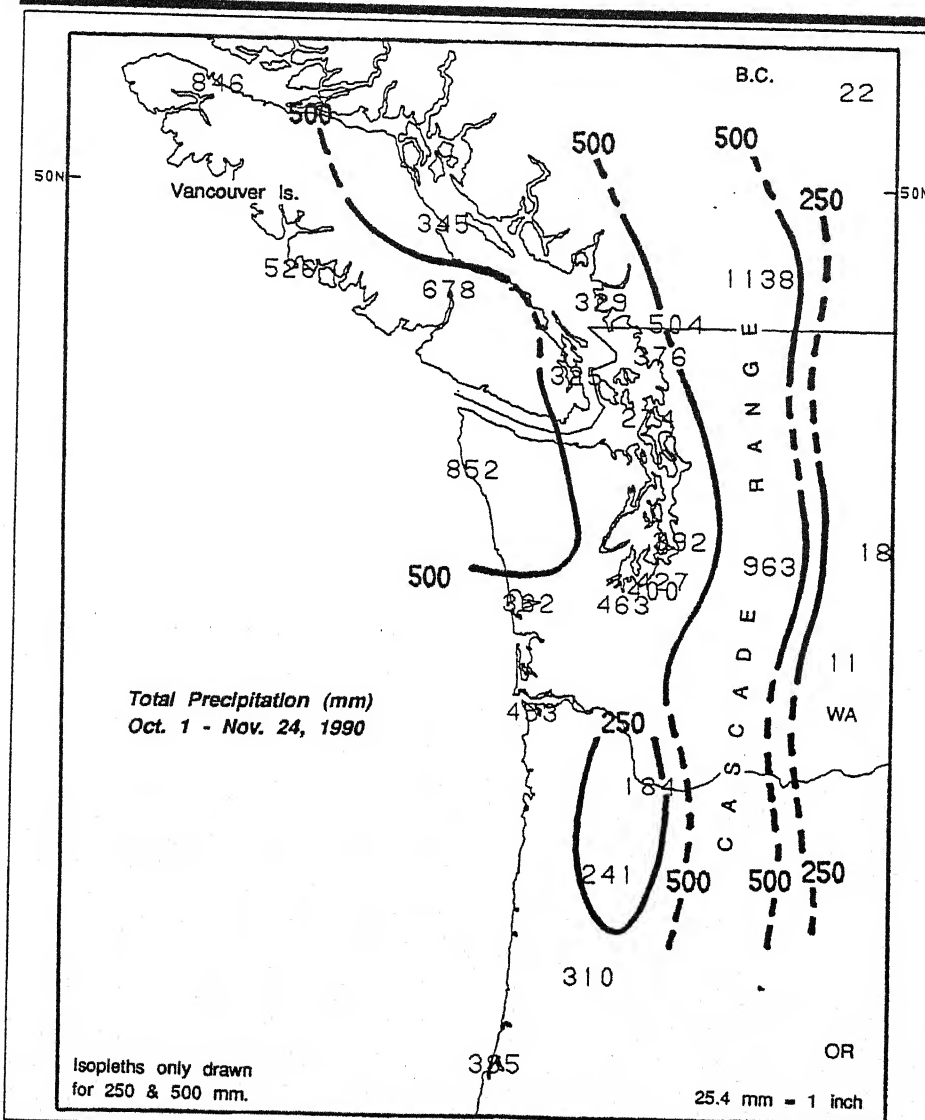


WEEKLY CLIMATE BULLETIN

No. 90/47

Washington, DC

November 24, 1990



The 1990 - 1991 rainy season (approximately Oct. - Apr.) in the Pacific Northwest has gotten off to a quick but destructive start. Since October 1, many locations in the Pacific Northwest and southwestern British Columbia have measured between 125% and 325% of the normal precipitation, with 8 - week totals approaching 1150 mm [45"]. The ample precipitation generated by a subtropical storm track dubbed the "Pineapple Express" has produced severe flooding in the region for the second time in two weeks. A massive storm during Nov. 9 - 12 caused tens of millions of dollars in damages in western Washington and Vancouver Island, and the combination of recent heavy rains (up to 9 inches in 24 - hours) and melting snows have forced nearly every river and stream in the western part of the state from Chehalis northward to flood. According to news reports, more than a thousand people fled their homes on Saturday, and storm - whipped waves sank part of the Interstate 90 floating bridge that crossed Lake Washington just east of Seattle.

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *U.S. cooling degree days (summer) or heating degree days (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF FEBRUARY 20, 1993

1. Southwestern United States:

VERY WET WEATHER PERSISTS.

Up to 175 mm of precipitation inundated sections of California and Arizona as six-week moisture surpluses reached 80 to 200 mm. According to press reports, continued flooding forced the closing of roads and tunnels, particularly in the Los Angeles area [9 weeks].

2. East-Central South America:

MORE HEAVY RAINS DRENCH URUGUAY.

Heavy rains (80 to 170 mm) soaked much of Uruguay and adjacent parts of Brazil and Argentina as unusually wet weather continued [2 weeks].

3. Europe and Northern Africa:

ABNORMALLY DRY CONDITIONS SPREAD NORTHWARD.

Little or no precipitation fell on much of central and southern Europe as significant moisture deficits began to spread northward across central Europe and the southern British Isles. Precipitation deficits since early January approached 140 mm in northern Italy and southern France and reached 200 mm on parts of the Iberian Peninsula [13 weeks].

4. Southeastern Europe and the Middle East:

COLD AIR REMAINS ENTRENCHED.

Temperatures averaged 3°C to 9°C below normal as abnormally cold weather persisted across much of the Balkans, the Middle East, northeastern Africa, and southwestern Asia [3 weeks].

5. Iran, Bahrain, and Qatar:

UNUSUALLY WET WEATHER CONTINUES.

Scattered rainfall totals of 15 to 30 mm dampened parts of southwestern Iran and the Arabian coast of the Persian Gulf. During the past six weeks, observed precipitation amounts were two to five times the normal totals [9 weeks].

6. East-Central Africa:

MORE HEAVY SHOWERS.

Up to 120 mm of rain drenched parts of Mozambique and Madagascar, with somewhat lower amounts recorded elsewhere. Six-week moisture surpluses were between 50 and 200 mm [8 weeks].

7. Northern South Africa:

SHOWERS BRING LIMITED RELIEF.

Scattered rains of 20 to 60 mm dampened the Transvaal and Lesotho, but six-week moisture deficits of 50 to 160 mm remained [9 weeks].

8. South-Central and Southeastern Asia:

VERY WARM WEATHER DOMINATES.

Temperatures averaged 3°C to 12°C above normal for the third successive week as unseasonably warm weather overspread much of Asia from Pakistan northeastward to Lake Baykal and Hokkaido Island of Japan. Readings soared to 39°C in parts of India [3 weeks].

9. Northern Australia:

HEAVY SHOWERS CONTINUE.

Heavy thunderstorms brought up to 180 mm of rain to northern Queensland as six-week moisture surpluses approached 340 mm at some locations. Farther north and west, however, only scattered totals above 50 mm were reported, allowing rainfall surpluses to decline somewhat [5 weeks].

10. Southern Queensland:

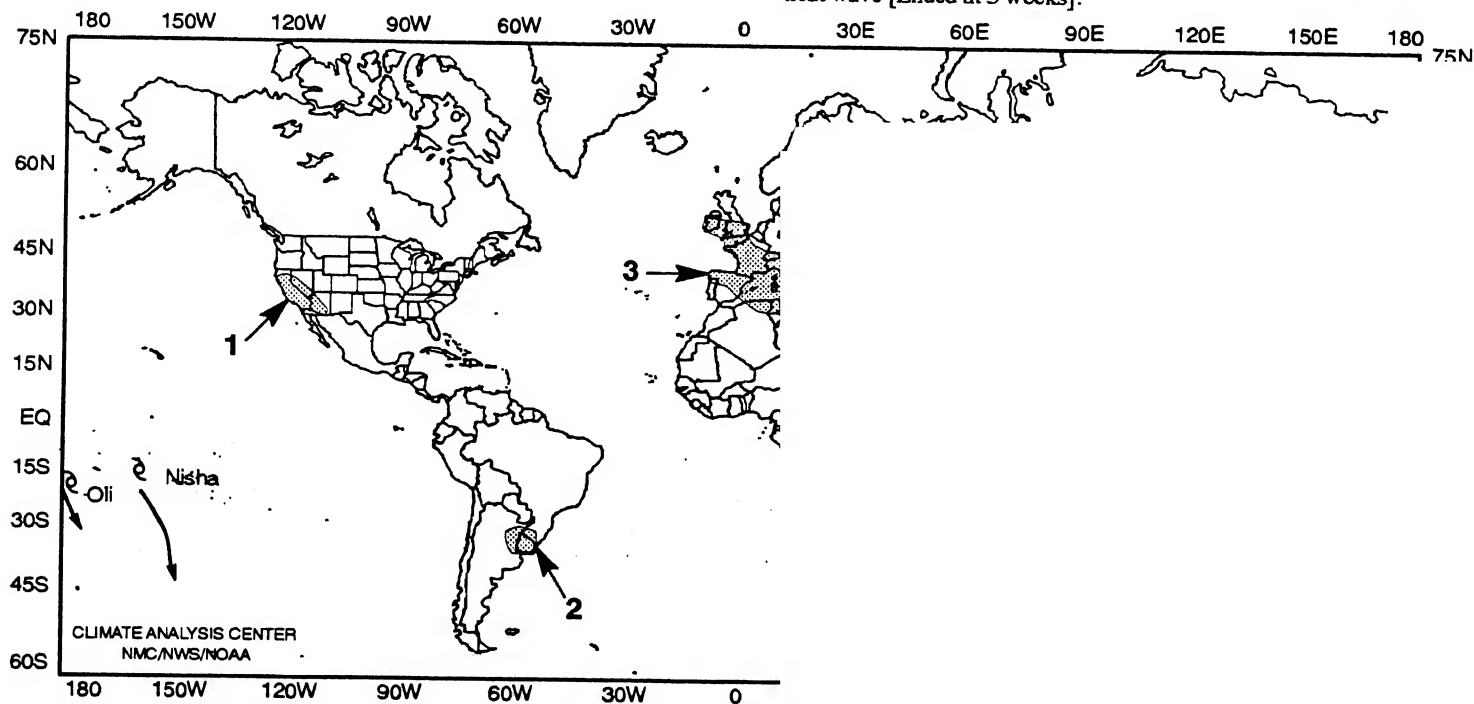
VERY DRY CONDITIONS DEVELOP.

While heavy rain continued to the north, precipitation amounts under 30 mm were observed across the southern half of Queensland during the last month, allowing significant short-term moisture deficits to develop [4 weeks].

11. Southern Australia:

TEMPERATURES RETURN TO NORMAL.

Near-normal temperatures covered the region, ending the late-season heat wave [Ended at 3 weeks].



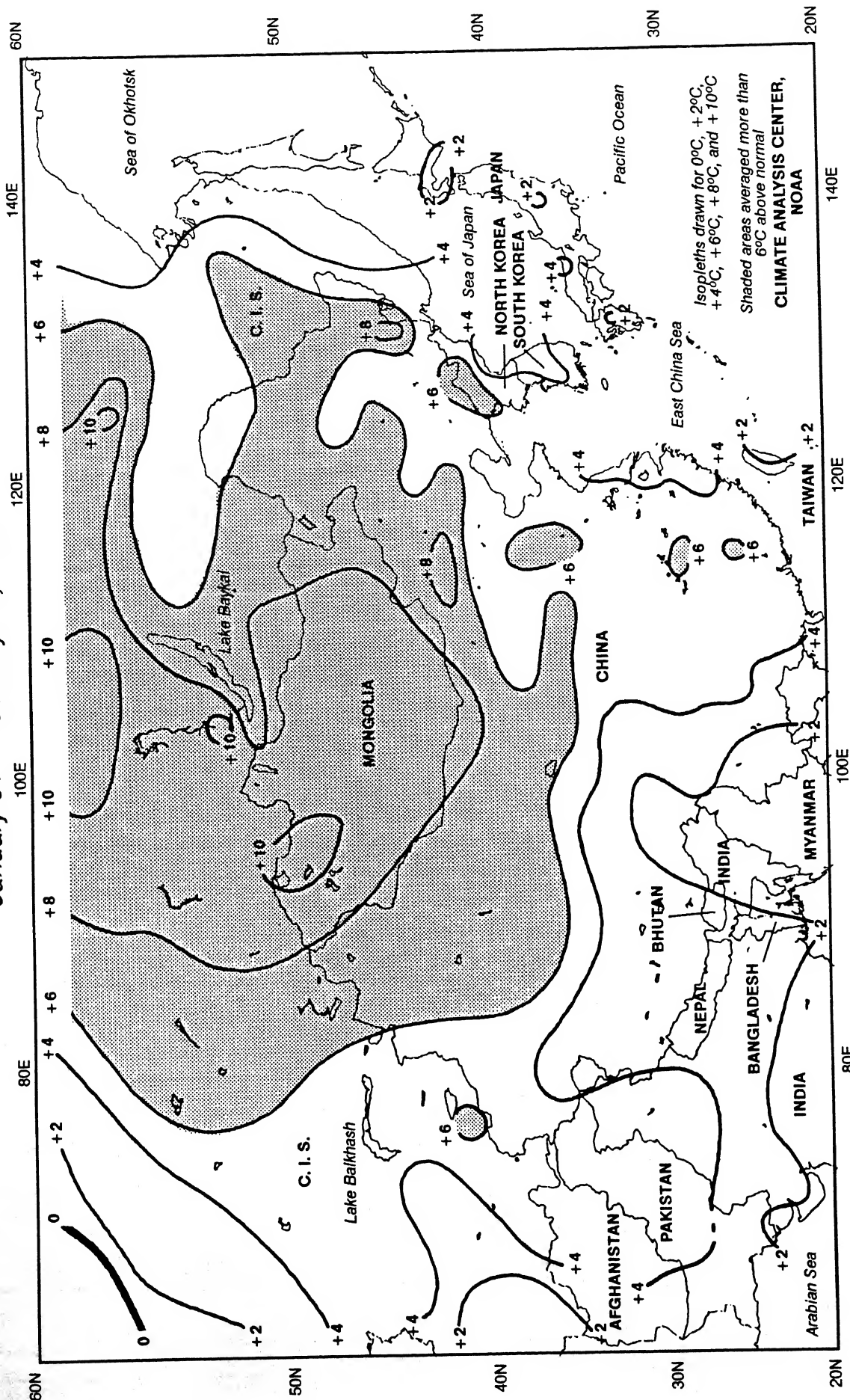
EXPLANAT

TEXT: Approximate duration of anomalies is in brackets. Precipitation am
MAP: Approximate locations of major anomalies and episodic events are
temperature anomalies, four week precipitation anomalies, long-ter

GLOBAL CLIMATE HIGHLIGHTS FEATURE

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°C)

January 31 – February 20, 1993



UNUSUALLY WARM WEATHER SPREADS ACROSS SOUTHERN AND EASTERN ASIA. Very mild conditions covered much of the region during the last three weeks. Temperatures averaged up to 11°C above normal and highs climbed above freezing in south-central Siberia. Meanwhile, departures of +8°C to +10°C were common in Mongolia, where the mercury soared up to 11°C. Readings averaged only 2°C to 4°C above normal across northern India, but highs reached 30°C to 38°C on a few days.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF FEBRUARY 14 – 20, 1993

Wintry weather prevailed across much of the contiguous U.S. Heavy snow fell from the Far West to the Northeast while unseasonable cold produced up to three dozen record lows from the northern Rockies to the deep South. Subzero lows plunged as far south as Oklahoma while freezing temperatures were recorded across much of northern Florida. Strong wind gusts combined with the cold air outbreak, generating wind chills below -30°F from the Great Plains to the Ohio Valley. Meanwhile, an early-week storm system dumped heavy snow from the Plains to the Northeast while strong thunderstorms swept through the deep South. Some of the largest snow totals in a decade were measured across portions of the middle Mississippi Valley, where up to 2 feet of snow accumulated. Farther south, thunderstorms packing heavy rain, hail, hurricane-force wind gusts, and at least one tornado rolled through the deep South. Stormy weather also battered the Far West as a series of strong winter storms continued to push into California. Heavy rains, excessive mountain snows, and strong wind gusts accompanied the storms. More than 7 inches of rain inundated some locations in northern California while more than two feet of beneficial snow blanketed the Sierras. According to press reports, 155 major reservoirs in northern California are 75%–80% full, and snowpack in the Sierras is 155% of normal. Farther south, thunderstorms dumped heavy rain and hail, generated damaging wind gusts, and spawned a tornado near Tipton, CA. Resultant flooding left up to 3 feet of water on some roads in Venice, CA on Thursday. Mt Baldy, CA recorded more than 8 inches of rain in a 24-hour period. Unseasonably mild weather engulfed most of Alaska, producing half a dozen record daily highs as the mercury soared into the twenties at Barrow, AK. In contrast, unusually cool conditions prevailed across the Hawaiian Islands, producing a few record daily lows as readings fell into the fifties.

The week began with a strong storm system moving out of the Rockies and into the southern Plains. The system generated snow across the Rockies on Sunday and across the central Plains and middle Mississippi Valley on Monday and Tuesday. Up to 2 feet of snow buried portions of the Mississippi Valley. Elsewhere, heavy snow and strong wind gusts generated three to four foot snow drifts in Kansas, closing a portion of I-70 on Monday. Farther south, thunderstorms raked portions of Texas and the lower Mississippi Valley, generating heavy rain, hail, and damaging wind gusts. The storm system then raced northeastward, spreading heavy snow across the Ohio Valley and Northeast by late Tuesday. Nearly two feet of snow blanketed portions of Pennsylvania and New York. Farther west, unseasonably cold weather spilled out of Canada and into the north-central U.S., producing nearly half a dozen record lows from Oregon to Kansas Tuesday morning.

During the last half of the week, frigid Arctic air continued to push southeastward. More than two dozen record daily lows were established from Montana to Florida as readings plunged below zero across the northern two-thirds of the Great Plains and Mississippi Valley. On Saturday morning, lows in the twenties were reported across northern Florida. Meanwhile, a strong winter storm moved into the Far West. Heavy rains inundated portions of California, generating mudslides and flooding, and forcing the closure of numerous roads. Meanwhile, heavy thunderstorms battered portions of southern California. Strong wind gusts downed trees and powerlines, cutting off electricity for more than 72,000 customers on Friday. The storm eventually tracked eastward, producing heavy rains and mountain snows from Arizona to Colorado on Saturday. Up to a foot of snow buried the White mountains while heavy rain caused flooding along the Verde River in Arizona. Elsewhere, heavy snow and strong wind gusts produced blizzard-like conditions in Utah and generated numerous avalanches near the Colorado ski resorts. As the week ended, a minor disturbance dusted portions of North Carolina with snow, providing some locations with their first measurable snowfall since December 1989.

According to the River Forecast Centers, the greatest weekly precipitation totals (more than 2 inches) fell on California, the southern Intermountain West, the central Rockies, northern Texas, and southern Oklahoma, the lower Mississippi Valley, and scattered locations in the Ohio Valley, the central Appalachians, the Northeast, and southern Alaska. Light to moderate amounts were recorded from the middle Mississippi Valley to the East Coast, across the remainders of the Rockies, in the Intermountain West, through the Far West, and across southern Alaska. Little or no precipitation occurred from the northern Plains to the northern Great Lakes across extreme southern Florida, and in the remainders of Alaska and Hawaii.

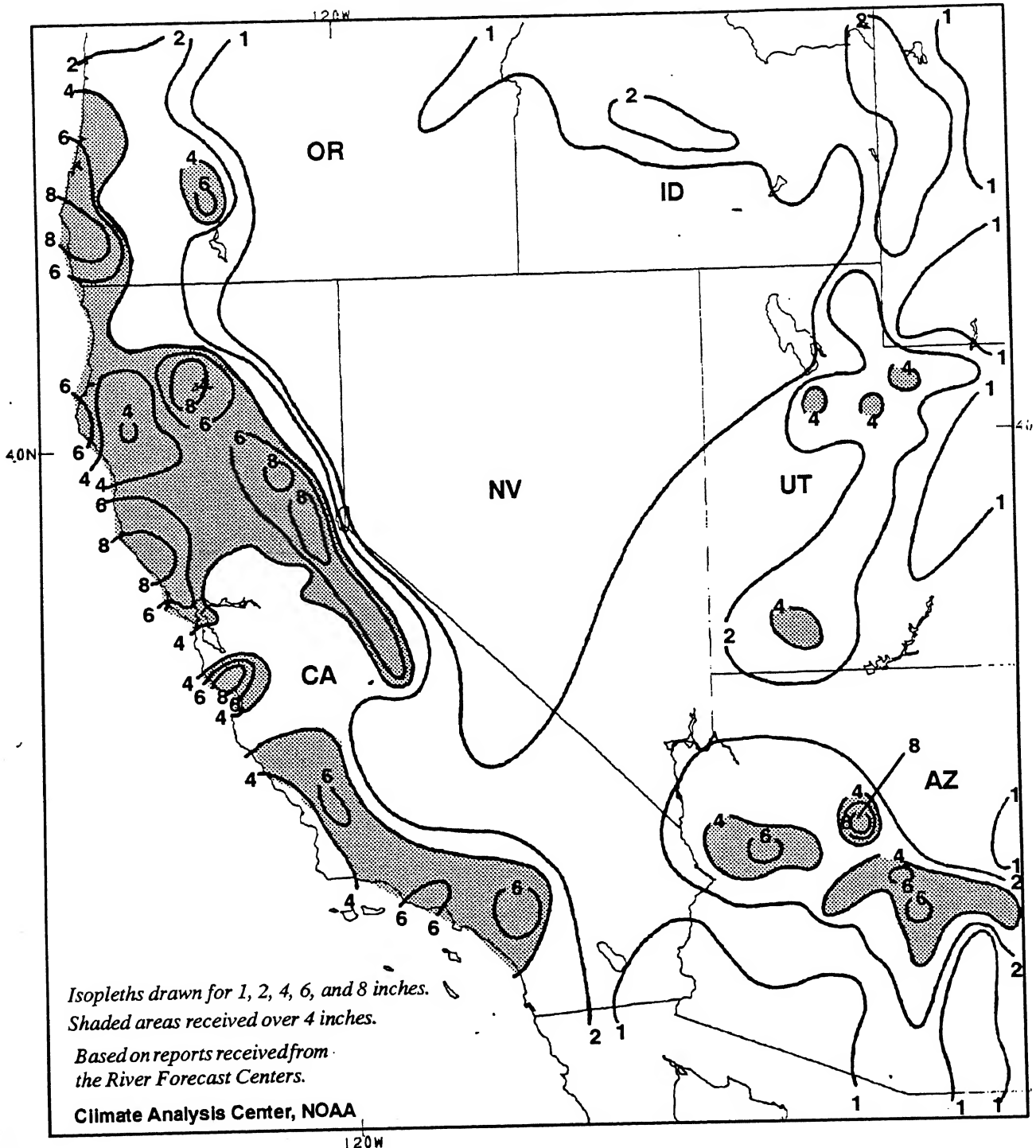
Warmer than normal conditions were confined to the central and southern Rockies, southwest Texas, Arizona, and the central and southern California coast. Weekly departures of $+4^{\circ}\text{F}$ to $+7^{\circ}\text{F}$ were observed in New Mexico and extreme southwestern Texas while near to slightly above normal temperatures prevailed elsewhere. Alaska, abnormally mild weather engulfed most of the state while weekly departures reached $+29^{\circ}\text{F}$ at Barrow.

Unseasonably cold weather prevailed from the East Coast to the High Plains, from the northern half of the Rockies to the Northwest coast, and in the Great Basin. Weekly departures between -12°F and -24°F were common from the middle Mississippi Valley to the Intermountain West while departures of -3°F to -11°F were common across the remainder of the contiguous U.S. Cooler than normal conditions also affected Hawaii, with departures around -2°F common across the islands.

NORTH AMERICAN HIGHLIGHTS FEATURE

TOTAL PRECIPITATION (IN)

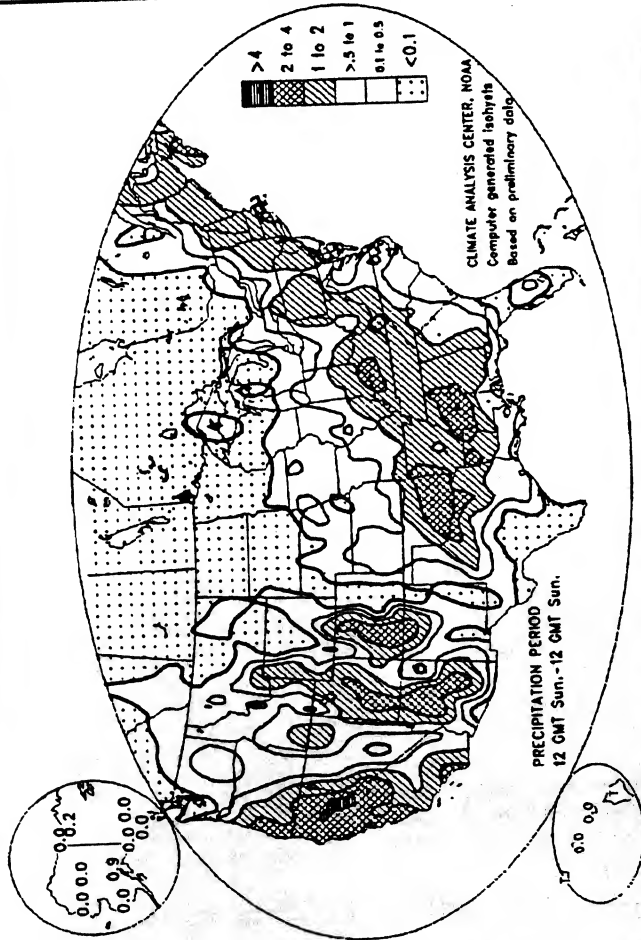
February 7 – 22, 1993



MORE HEAVY PRECIPITATION INUNDATES CALIFORNIA AND ARIZONA. Up to ten inches of precipitation fell on large portions of the Far West as another series of storms swept from the Pacific Ocean eastward through the region. According to press reports, Malibu, CA received more than six inches of rain in one day as heavy showers and thunderstorms brought renewed flooding to portions of southern California and Arizona last week. Farther north, the recent storms increased the Sierra Nevada snowpack to approximately 155% of normal, according to the California Department of Water Resources, and filled most critical reservoirs to their highest levels in seven years.

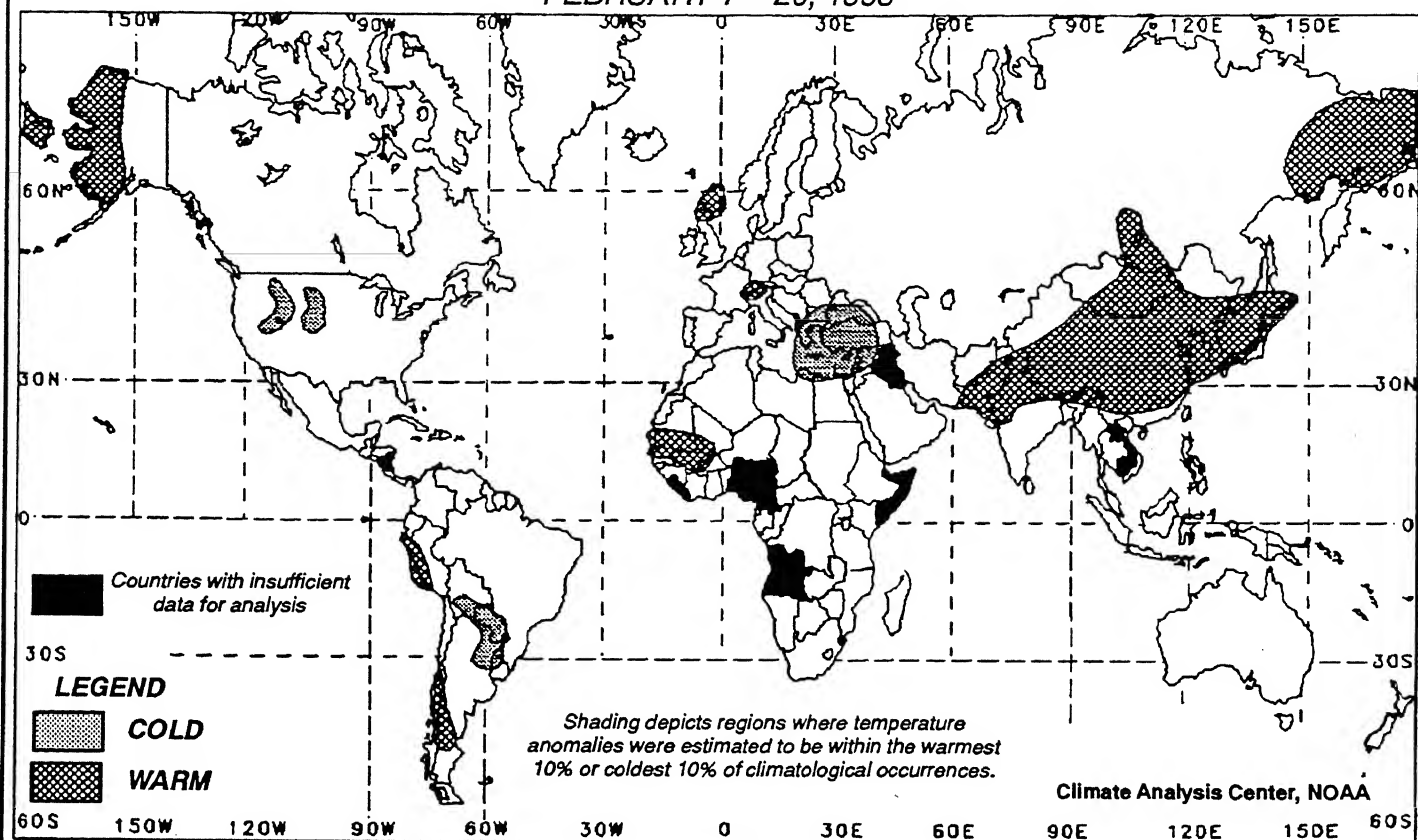
UNITED STATES WEEKLY CLIMATE CONDITIONS (Continued)

OBSERVED PRECIPITATION (INCHES)



TWO-WEEK GLOBAL TEMPERATURE ANOMALIES

FEBRUARY 7 – 20, 1993



FOUR-WEEK GLOBAL PRECIPITATION ANOMALIES

JANUARY 24 – FEBRUARY 20, 1993

